

Appl. No. 09/767,027
Amdt. dated December 24, 2003
Reply to Office Action of October 31, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 (Original) Cancel.

2 (Original). Cancel.

3 (Presently Amended) The device of claim 4 24 wherein said delivery unit has physical characteristics ~~defining fluid flow~~, and wherein said memory is used to store said physical ~~characteristic~~ characteristics.

4 (Original). The device of claim 3 further comprising a characteristic sensor adapted to sense one of said characteristics.

5 (Original). The device of claim 3 wherein said selector is adapted to select one of said physical characteristics.

6 (Presently Amended) . The device of claim 4 24 wherein said profiles define a fluid characteristic of said fluid.

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7 (Original). The device of claim 6 wherein said fluid characteristic is selected from a fluid viscosity, fluid specific weight and fluid temperature

8 (Original) Cancel.

9 (Presently Amended) The automatic injection device of claim ~~8~~25 wherein said preselected profile defines a time dependent sequence of operation during which fluid flows from said syringe at predetermined rates.

10 (Original). The automatic injection device of claim 9 further comprising a pressure sensor adapted to measure a fluid pressure associated with the fluid from said syringe, and wherein said controller is adapted to control the fluid flow in accordance with said fluid pressure.

11 (Original). The automatic injection device of claim 10 wherein said profile includes a fluid pressure limit and wherein said controller is adapted to limit said fluid rate in accordance with said fluid pressure limit.

12 (Presently Amended). The automatic injection device of claim ~~8~~ 25 further comprising a needle shaped to be inserted in tissues and a tube coupling said syringe to said needle.

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13 (Original). The automatic injection device of claim 12 wherein said needle is defined by a needle size, wherein said memory includes a plurality of needle sizes, and wherein said selector is arranged for the selection of the needle size from said memory.

14 (Original). The automatic injection device of claim 12 wherein said tube is defined by a tube size, wherein said memory includes a plurality of tube sizes and said selector is arranged for the selection of the tube size from said memory.

15 (Original). The automatic injection device of claim 12 wherein said syringe is defined by a syringe size and type, wherein said memory includes a plurality of syringe sizes and types and wherein selector is arranged for the selection of the syringe size and type.

16 (Original). Cancel.

17 (Presently Amended) The method of claim ~~16~~ 26 wherein said device includes a pressure sensor detecting a fluid pressure, further comprising:
measuring a current fluid pressure; and
controlling fluid flow in accordance with said fluid pressure.

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18 (Presently Amended). The method of claim ~~46~~ 26 further comprising a delivery member adapted to deliver said fluid and including a syringe, a tube and a needle having respective syringe, tube and needle sizes, further comprising selecting said syringe, tube and needle size prior to the delivery of said fluid.

19 (Original). The method of claim 18 wherein said sizes are selected manually.

20 (Presently Amended). The method of claim ~~19~~ 18 wherein at least one of said sizes is stored in the memory, and wherein said one size is selected from said memory.

21 (Original). The method of claim 18 wherein tube size includes one of a tube length and tube inner diameter.

22 (Original). The method of claim 18 wherein said needle size includes one of a needle length and a needle diameter.

23 (Original). The method of claim 18 wherein said syringe size includes one of syringe type and a syringe size.

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24 (New) An electronic device for selectively injecting or withdrawing fluid from a patient's body comprising:

a reservoir for injecting or collecting said fluid;

a fluid delivery system having a first end coupled to said reservoir and a second end adapted to be inserted into the patient's body;

an electrical drive mechanism arranged and constructed to apply a force within said reservoir in response to commands in one of a first direction in which fluid is injected from said reservoir through said fluid delivery system into the patient and a second direction in which fluid is withdrawn from the patient through said fluid delivery system;

310 a sensor coupled to one of said reservoir, fluid delivery system and electrical drive mechanism for sensing an internal parameter indicative of a force generated by said drive mechanism and internal resistances within said reservoir and said fluid delivery system to said force; *to control the exit pressure.*

a controller coupled to said sensor and said electrical drive mechanism and generating commands for said electrical drive mechanism in accordance with a profile defining operational parameters including a flow rate for said drive mechanism and a peak pressure;

a memory holding a plurality of profiles, each profile defining a surgical procedure; and

a profile selector for selecting one of said profiles for said controller.

25 (New). An injection device for injection of fluids into body tissues comprising:
a fluid reservoir holding a fluid to be injected;
a fluid delivery section having a first end coupled to said fluid reservoir and a second end adapted to be inserted into the body tissues;

a drive mechanism adapted to generate an internal pressure within said fluid reservoir in response to commands to force said fluid to flow through said fluid delivery section and out through said second end, said fluid having an exit pressure at said second end;

an input element for inputting physical characteristics of at least one of said fluid, said fluid reservoir and said fluid delivery section;

a sensor that senses an internal parameter indicative of said internal pressure;

3⁰ a controller receiving said physical characteristics and said internal parameter, said controller generating said commands in accordance with a profile;

a memory storing a plurality of profiles, each profile being associated with a particular surgical procedure and defining a plurality of operational parameters including a fluid flow rate; and

a selector for selecting one of said profiles for said controller.

26 (New). A method injecting fluids into a body tissue comprising:
providing a reservoir filled with a fluid;

too broad

to control
the exit
pressure

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providing a memory with a plurality of profiles, each profile being associated with a different surgical procedure and defining a flow rate;

selecting one of said profiles;

forcing said fluid from said reservoir through a fluid delivery system into the body tissue; and

automatically controlling the flow of said fluid in accordance with the selected profile.

Fig 10

